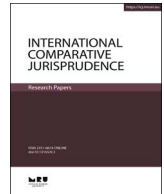




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## International Comparative Jurisprudence

journal homepage: [www.elsevier.com/locate/icj](http://www.elsevier.com/locate/icj)Lessons from the past for weapons of the future<sup>☆</sup>

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## ABSTRACT

One of the key postulates of modern law of armed conflict or international humanitarian law (IHL) is that the choice of weapons by fighting parties is not unlimited. Thus, in order to ensure excessive harm is not inflicted, certain weapons are prohibited or their use is restricted. Although every case is quite unique, limitations related to weapons attest to the fact that effects of ordinary use of those weapons were deemed incompatible with the requirements of IHL. This article examines the potential for regulation of lethal autonomous weapons, while at the same time drawing upon lessons from the past. The analysis covers various ways how IHL restricts the choice of means of warfare – formal regulation, application of customary rules and principles to a weapon, and legal weapons review – all of which offer valuable insights on how to accommodate rising legal uncertainty over autonomous weapons. In this respect, the ‘headline’ of World War II, the nuclear weapon, serves as an exceptional example that some weapons bring about unparalleled regulatory challenges. Like atom bomb, lethal autonomous weapons mark revolutionary changes in warfare. Yet, this article is to confirm applicability and adaptability of IHL to any new weapon, including an autonomous one.

## 1. Introduction

Humanitarian concerns for all those caught up in armed conflicts are, in classical understanding of the law of armed conflict or international humanitarian law (hereafter – IHL), reflected in two ways. Firstly, they are entrenched in standards of protection for victims of armed conflicts (be they civilians, injured combatants, or prisoners of war). Secondly, they are embedded in limitations of means and methods of warfare. The adequacy of the latter body of rules,<sup>1</sup> even with its expansion over the years, is being constantly challenged by development and deployment of new weapons. Already Henry Dunant, the founding member of the International Committee of the Red Cross (hereafter – ICRC), gave a prophetic warning about future weapons becoming more frightful and future wars much deadlier (Dunant, 1986, p. 128). The epitome of that was World War II: a handful of new weapons, the most (in)famous being the atom bomb, were fielded and the human loss was unparalleled. To date nuclear weapons stand as an interesting example of interplay between politics and law that resists clear and conclusive assessment from IHL perspective. Nonetheless, the need for IHL to ensure humanitarian considerations were at play when belligerents chose means of warfare has become ever more pronounced.

However, IHL might be facing a new challenge with a prospect of another unprecedented military technology – lethal autonomous weapons (hereafter – LAWS). Artificial intelligence and robotics researchers warn that we are on the brink of yet

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<sup>1</sup> It is also known as the Hague law: the term derived from the city in which first relevant rules were negotiated at the end of the XIXth and the beginning of the XXth century.

another global arms race ([Future of Life Institute, 2015](#)), even more intense than the one we have witnessed with nuclear arms, and can currently see the revival of ([Pifer, 2016](#)). Thus, in order to prevent abuses of and ensure respect for IHL, various regulatory experiences and how they can contribute to the search for legal framework for LAWS will be analysed. To this end, in the first part of this article prospect of formal regulation of LAWS and some related contentious issues will be discussed. In the second part, the IHL principles directly related to weapons will be elaborated on to see if they eliminate a risk of legal vacuum with regards to development and deployment of LAWS, formal regulation pending. Finally, legal weapons review will also be analysed as one of the tools to address legality of any new weapon, including LAWS.

## 2. How IHL<sup>2</sup> restricts the choice of means of warfare

Throughout the human history and history of wars we have witnessed numerous significant advancements in (military) technology, conditioning serious changes in military engagements. Conflicts are fought with weapons, so, naturally, the importance of achieving superior arsenal than that of one's enemy is undeniable. Yet, the need to limit the choice of permissible weaponry has both pragmatic and humanitarian underpinnings and is, thus, at the roots of modern IHL. Many of the related rules are now codified and can be found in the 1977 [Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts](#) (1978; hereafter – Additional Protocol I). However, some new weapons, like LAWS can pose more complex challenges than others. In order to assess the potential regulation of LAWS, both current initiatives and some contentious issues that may hinder legislative efforts are discussed below.

### 2.1. How weapons are regulated under IHL

Regulation of specific weapons is achieved in two ways: limits are set through either prohibitions on the use or restrictions upon the manner of deployment of specific weapons ([Mathews & McCormack, 1999](#)). In some cases, “weapons may not necessarily be forbidden or questionable but might, in due course, be ripe for regulation.” ([Detter, 2016](#), p. 262). This is important, in particular, when the use of a certain weapon results in conflicting practices and those who use them invoke different legal reasoning.<sup>3</sup>

Formal international restrictions or prohibitions were achieved regarding a number of weapons: exploding bullets, expanding bullets, chemical and biological weapons, weapons that injure with non-detectable fragments, mines, booby-traps and improvised explosive devices, incendiary weapons, blinding laser weapons, explosive remnants of war, anti-personnel mines, cluster munitions.

In each case the effects of normal use of a particular weapon were emphasized to argue the necessity of restrictions or a ban. And those effects could be summarized as indiscriminate, excessively injurious, going beyond the level of reasonable military advantage, or simply abhorrent. In short, such effects were deemed contrary to the requirements of IHL.

Despite the destructive power and disastrous effects of nuclear weapons, no universal ban (like with other mass destruction weapons) exists,<sup>4</sup> reminding that States and their interests are the driving force behind international agreements. Also, as mentioned above, some regulatory initiatives fall under arms control regimes rather than within the scope of IHL.

Almost all of the above-mentioned weapons were deployed on actual battlefields, so the results of their use were well recorded. However, prohibition of blinding laser weapons was adopted even before it had actually been used on the battlefield ([Doswald-Beck, 1996](#)). It offers an important lesson to take away: it is possible to exert pressure and achieve regulatory success without actually fielding the weapon. What is also important to note here is that most of the prohibitions or restrictions on specific weapons mentioned above now make part of customary law ([ICRC Customary IHL Database, 2016](#)).<sup>5</sup> It attests to accumulated *opinio juris* and state practice, as well as a universal recognition of devastating effects of these weapons. In order to further assess prospective regulation of LAWS, it is, therefore, necessary to understand defining characteristics of a weapon, effects of its ordinary use, and what issues a formal agreement should and potentially could address.

### 2.2. Prospects of regulation of LAWS

LAWS have been a widely debated topic for several years now, as rapid technological progress might at some point in the future result in once sci-fi scenarios. The debate covers a wide range of questions. Practitioners and scholars have different answers to these questions that feed into different understanding of potential regulation of LAWS. Some support an outright ban of LAWS, some argue in favor of certain restrictions and limitations regarding the building and use of LAWS, and some believe the debate over regulation of LAWS is premature.

Full autonomy is not yet achieved, however, application-specific artificial intelligence has for years been used in battlefields. Examples of such use include image processing and target recognition, missile defence systems, battle management systems,

<sup>2</sup> This article is dedicated to explore the rules applicable in armed conflicts, i. e. IHL, and how they instruct the choices of belligerent parties. Arms control regimes play an even more important role in restricting the development of weapons, but they do not fall within the scope of this article.

<sup>3</sup> One of the examples could be unmanned aerial vehicles (UAVs). Although there is little evidence to support per se illegality of UAVs, the diverse practice of their usage and legal arguments that are brought forward to argue they are used lawfully might eventually lead to formal regulation.

<sup>4</sup> Although the Treaty on the Non-Proliferation of Nuclear Weapons – an instrument to prevent the spread of nuclear weapons and achieve nuclear disarmament – was adopted in 1968.

<sup>5</sup> Customary rules are established regarding poison and poisoned weapons, biological weapons, chemical weapons, expanding bullets, exploding bullets, weapons primarily injuring by non-detectable fragments, booby-traps, landmines, incendiary weapons, blinding laser weapons.

autopilots, simulations, etc. Full autonomy in weapon systems not only could enable machines to perform more complex tasks, but could eventually mean that humans do not take “life and death” decisions and are not even able to understand the process that leads up to them.

Before we explore the question of perspective regulation of LAWS, it is necessary to establish a working definition for further analysis, as there is no internationally agreed definition. Philosopher of technology dr. [Asaro \(2012\)](#) suggests that LAWS could be understood as “[...] any automated system that can initiate lethal force without the specific, conscious, and deliberate decision of a human operator, controller, or supervisor” (p. 694). The ICRC, one of the driving forces behind the discussions on regulating LAWS, suggests that definition of autonomous weapons (or autonomous weapon systems) is “an umbrella term”. To further frame the discussions of stakeholders, the [ICRC \(2016\)](#) proposes to define LAWS the following way: “Any weapon system with autonomy in its critical functions. That is, a weapon system that can select (i.e. search for or detect, identify, track, select) and attack (i.e. use force against, neutralize, damage or destroy) targets without human intervention” (p. 71). Both Asaro’s and the ICRC’s definitions highlight the key characteristic in distinguishing LAWS from other weapons (like remotely controlled ones): the exclusion of human operators from critical stages of weapon deployment.

As mentioned above, the concerns voiced in the debate over LAWS translate into different positions regarding potential regulation: a ban, specific regulation (certain restrictions), or no regulation (at least for the time being). There is a need to delineate what each of these options mean and what arguments are used to support them. Proponents of a ban of LAWS suggest such a prohibition should be adopted as soon as possible, before artificial general intelligence and full autonomy is achieved. Many artificial intelligence and robotics researchers are calling for “a ban on offensive autonomous weapons beyond meaningful human control” ([Future of Life Institute, 2015](#)). This does not mean that all weapons with autonomous capacities should be banned. It means that offensive weapons without human supervision in their critical functions could not be developed and deployed. Thus, weapons would no longer be fully autonomous, as their key feature – unsupervised decision-making – would be eliminated. Proponents of such a proposal list a number of reasons why a ban is necessary: potential arms race, lowering of the threshold for resorting to military force, incompatibility with the laws of armed conflict, and ethical concerns ([Docherty, Human Rights Watch & Harvard Law School, 2012](#)). From the perspective of IHL it is important to address the latter two, and answer several questions: (1) whether autonomous weapons could ensure respect for IHL, and (2) whether IHL entails a requirement for humans to remain “in the loop”. The first question will be addressed in the second part of this article, where the meaning of main IHL principles pertinent to weapons and their applicability to LAWS will be analysed. It is worth noting here, however, that there is a general agreement that, “as with all weapon systems, the rules of IHL are fully applicable to LAWS” ([Biontino, 2016](#), p. 8). Thus, compliance with the requirements of IHL has to be ensured. The second question raises fundamental concerns about the nature of IHL. [Asaro \(2012\)](#) asserts:

[IHL] is [...] anthropocentric. Despite the best efforts of its authors to be clear and precise, applying IHL requires multiple levels of interpretation in order to be effective in a given situation. IHL [...] explicitly requires combatants to reflexively consider the implications of their actions, and to apply compassion and judgment in an explicit appeal to their humanity. (p. 700)

This is not merely a theoretical consideration: soldiers are encouraged to use their “gut feeling” in the field ([Geiss, 2015](#), p. 14), and obviously this is something that is unattainable for machines. It is also argued that the idea of restraint – which is one of the cornerstones of IHL – is established through reciprocity of risk shared among belligerents in a battlefield ([Evangelidi, 2016](#)). Such reciprocity would be obliterated should humans be retreated not only from a physical battlefield, but also from taking lethal decisions. UN Special Rapporteur on extrajudicial, summary or arbitrary executions, [Heyns \(2013\)](#), concludes in line with the opponents of LAWS, “Machines lack morality and mortality, and should as a result not have life and death powers over humans” (p. 17). [Heyns \(2016\)](#) also notes, “[...] something may be lawful but be awful [...]” (p. 6), thus placing the emphasis not on legal arguments alone, but on the shared understanding of what future battlefields should look like.

Those who urge to consider specific regulation of LAWS have to deal with speculative scenarios. Experts predict that LAWS “might be given more freedom of action, for example: increased mobility to operate outside tightly constrained spatial and temporal limits, and increased capacity to determine their own functions and targets, or to react to changing circumstances” ([ICRC, 2016](#), p. 77). Lack of predictability with regards to functionality of future LAWS only exacerbates the prospects of any legislative efforts. On the other hand, precautionary measures can be taken even if all effects of a weapon cannot be foreseen, but there are reasons to believe at least some would be too harmful ([Biontino, 2016](#)). As the [ICRC \(2016\)](#) argues:

Indeed, deploying a weapon system whose effects are wholly or partially unpredictable would create a significant risk that IHL will not be respected. The risks may be too high to allow use of the weapon, or else mitigating the risks may require limiting or even obviating the weapons’ autonomy. (p. 81)

The goal of specific regulation could be to settle some really contentious issues, like liability for violations of IHL, concepts of “meaningful human control” or “appropriate human judgement”, level of supervision in different stages of the “life cycle” of LAWS, or preference of non-lethal response. The resolution of these issues is, however, dependent on technical and operational parameters of LAWS. There is also an on-going debate about applicability of various control mechanisms, or “brakes”, that could be both technological and normative. Illustrative examples are [Arkin’s \(2007\)](#) “ethical governor”, an in-built feedback loop, or [Thurnher’s \(2012\)](#) four control measures for commanders of LAWS (proper rules of engagement, limited deployment scenarios, context of conventional warfare, and guarantees of human oversight and override). However, more detailed regulatory efforts are rather difficult to argue for at this stage.

Finally, some argue that debate over the regulation of LAWS is premature, given that fully autonomous weapons are not yet developed. Such concerns are raised in informal talks, and some states remain “hesitant” to engage in more concrete negotiations

(Biontino, 2016, p. 12). Yet, the discussion appears to be moving towards acknowledging a need to establish certain limitations in advance.

### 2.3. Current regulatory endeavors

There were three *informal* expert meetings in 2014, 2015 and 2016 convened within the review framework of the *Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects* (1980; hereafter – Convention on Certain Conventional Weapons or CCW). Opinions were diverse on numerous issues: from definition<sup>6</sup> to timing<sup>7</sup> to arguing about the appropriateness of the CCW framework<sup>8</sup> to pondering about the necessity of a preemptive ban.<sup>9</sup>

The CCW framework offers plenty of flexibility to either prohibit, or limit the use of the weapon, as well as set restrictions on, for example, development, production or transfer of LAWS. As it is necessary to consider dual-effects of artificial intelligence technology, the CCW framework can accommodate such demands. Adoption of the CCW *Protocol IV on the blinding laser weapons* (1995) offer great lessons in this regard (Mines Action Canada, 2014). Still, the momentum is just building and it is difficult to say how States would further engage in any more concrete and formalized legislative processes with regards to LAWS.

## 3. How general principles and customary rules of IHL restrict the choice of weapons

Lack of specific regulation, i. e. a ban or a set of restrictions, does not suggest that a certain weapon would be *ipso facto* permissible. On the contrary, general (fundamental) principles and customary rules of IHL also play an important role in limiting belligerents' choice of means and methods of warfare. Opinions differ as to the direct effects of principles and if, independent of treaty law, they suffice to render a weapon illegal (Nuclear Weapons Advisory Opinion, 1996). However, it is argued here that weapons cannot be deployed in armed conflicts contrary to the requirements of the principles. This means that, even if a certain weapon could not be proclaimed illegal on the basis of a principle alone, it could still be unlawful to use it in battlefield because of its incompatibility with the principles.

Essential, and most relevant to this analysis, are principles of distinction (between civilians and combatants, civilians objects and military objectives) and prohibition on causing unnecessary suffering, both of which make part of customary IHL, as well. These principles are considered to be “cardinal”, “intransgressible”, and embedded with a character which “permeates the entire law of armed conflict” (Nuclear Weapons Advisory Opinion, 1996, p. 257). They are not based on a separate source of law; rather, they are derived from treaties, custom and general principles of law (Sassoli, Bouvier & Qutin, 2012). For this reason, they will be analysed with reference to those sources, in particular, customary law. This way will also help show the principles as expressing the meaning of rules, supporting them and their interpretation. In addition to this, distinct attention will be paid to the so-called Martens clause, and if it can truly serve to fill in any potential regulatory gaps.

### 3.1. Principle of distinction

Principle of distinction (or discrimination) can be found in numerous IHL instruments and it is also a customary rule (Rule 1, n.d.) applicable in both international and non-international armed conflicts. As such, it is binding on all parties in armed conflicts, including non-state actors.

The rationale of the principle is clear: indiscriminate attacks are prohibited under IHL. So, parties have to distinguish between civilians and combatants, civilian objects and military objectives at all times. When analysed with reference to the means of warfare, the principle takes shape of the following customary rule: “The use of weapons which are by nature indiscriminate is prohibited” (Rule 71, n.d.). Thus, the principle of distinction is not only about target identification<sup>10</sup> and reliable intelligence, but also very much about deploying only those weapons that can be directed at military objectives or whose effects can be limited as required by IHL. Therefore, it is linked to both the manner of use and the nature (design) of a weapon. While it is obvious that any weapon can be used contrary to the requirements of IHL, it is also a fact that intrinsic features of a weapon might preclude any distinction between civilian and military targets. Examples of such indiscriminate weapons, as already established in customary law, range from anti-

<sup>6</sup> In 2014: “The issue of a definition was raised by a number of delegations. While some suggested that a clarification would be necessary at a certain stage if more substantial work were to be undertaken, most of the delegations indicated that it was too early to engage in such a negotiation.” (Simon-Michel, 2014, p. 3.). In 2015: “While some organisations called for rigorous definitions, others argued that, at this stage of the debate, an adequate framework for regulations should take priority over definitions.” (Biontino, 2015, p. 6.) In 2016: “A large number of delegations emphasized the need for a better understanding of LAWS. In this regard, delegations stressed the need for a working definition at this stage, while others noted that this endeavour is problematic given that LAWS do not yet exist. In addition, some delegations indicated the need for further discussion on possible elements of a definition.” (Biontino, 2016, p. 3.)

<sup>7</sup> Some delegations questioned the meetings at the stage where LAWS are not yet developed.

<sup>8</sup> “Delegations expressed their appreciation for the discussions within the framework of the Convention on Certain Conventional Weapons (CCW). With a wide range of experts on military matters, international law and humanitarian issues, the CCW could guarantee a balance between humanitarian concerns and security aspects. Some delegations underlined the need for a fact-based discussion. Other delegations added that the human rights aspects of the issue should be addressed and that the CCW might not be the only appropriate framework for discussion on LAWS.” (Biontino, 2015, p. 4–5).

<sup>9</sup> “In light of the unpredictable and potentially harmful consequences of such developments, several delegations reiterated their call for a pre-emptive ban. It was also recognized, however, that some delegations are hesitant regarding possible regulation of such systems given the lack of certainty about the nature of LAWS and that they do not yet exist.” (Biontino, 2016, p. 12).

<sup>10</sup> With regards to this, what IHL considers to be a legitimate target becomes of particular importance. Yet, it is outside the scope of present analysis.

personnel landmines to chemical or biological weapons.

### 3.2. Prohibition on causing unnecessary suffering

IHL was developed with an embedded notion of minimizing horrors of war and limiting military force to the purpose of achieving military advantage over one's enemy. It was established quite early in the history of laws of war that inflicting suffering and losses that were beyond what was militarily necessary was not acceptable. Concerns for the fate of, in particular, those engaged in fighting shaped the following rule: "The use of means and methods of warfare which are of a nature to cause superfluous injury or unnecessary suffering is prohibited" (Rule 70, n.d.). It is now both written and customary norm of IHL, applicable in international and internal armed conflicts.

This rule focuses on the effects of a weapon that are not user-dependent and reflects a fine balance that belligerent parties ought to strike between military necessity and expected injury or suffering that a weapon is to inflict on a person under conditions of its ordinary use. The rule is violated if injury or suffering "is out of proportion to the military advantage sought" (Rule 70, n.d.). Yet, it is not an easy task to assess if, for example, a machete causes necessary suffering or an injury from a gas attack is superfluous. State practice that support the rule (Rule 70, n.d.) points towards certain criteria to help determine if the principle would be breached: inevitability of serious permanent disability or inevitability of death as a result of regular use of a weapon. However, one would desire a greater level of objectivity with regards to definitions of "unnecessary suffering" and "superfluous injury" – all the more so because it is in the interest of specialists from many fields: law, medicine, politics, communication, weapon manufacturing, etc.

With support of the ICRC certain recommendations were released in an attempt to offer objective means to determine, understand and quantify design-dependent and foreseeable harm caused by present and future weapons (Coupland, 1997). This report (p. 23) suggests that "unnecessary suffering and superfluous injury" occur when weapons in normal use cause: (1) specific disease, specific abnormal physiological state, specific abnormal psychological state, specific and permanent disability or specific disfigurement; or (2) field mortality of more than 25% or a hospital mortality of more than 5%; or (3) large wounds as measured by the Red Cross wound classification; or (4) effects for which there is no well recognized and proven treatment. It is important to note that the baseline above-mentioned effects are measured against are the effects of conventional weapons. It is established that conventional weapons "[...] utilize projectiles or (non-nuclear) explosions and, as a function of their design, inflict physical injury by imparting kinetic energy but not foreseeably to a specific part of the body. Treatment requirements for such injury are well defined" (Coupland, 1997, p. 7).

Applying the criteria listed above to new weapons is not intended to make weapons acceptable from a moral perspective, as any weapon in battle generates suffering. Yet, recommended criteria can facilitate a legal judgement and help belligerents meet their obligations under the principle.

### 3.3. The Martens clause

The clause was first introduced in the preamble to the 1899 Hague Convention with Respect to the Laws and Customs of War on Land (Schindler and Toman, 1988), and it reads as follows:

Until a more complete code of the laws of war is issued, the High Contracting Parties think it right to declare that in cases not included in the Regulations adopted by them, populations and belligerents remain under the protection and empire of the principles of international law, as they result from the usages established between civilized nations, from the laws of humanity and the requirements of the public conscience.

This clause – later reiterated in a number of legal instruments and relied upon in international jurisprudence – drew a lot of attention, not least because, "it is very loosely worded and has consequently given rise to a multiplicity of often conflicting interpretations." (Cassese, 2000, p. 188). However, Judge Meron (2000) warns that significance of the clause should not be overrated: "Except in extreme cases, its references to principles of humanity and dictates of public conscience cannot, alone, deligitimize weapons and methods of war, especially in contested cases" (p. 88). So, one has to be cautious with application of the Martens clause to specific situations or specific weapons, as there are many steps from *lex desiderata* to *lex lata*.

### 3.4. Applying the principles

One of the most interesting cases of applying the principles of IHL to a specific weapon comes with the 'headliner' of WWII – the atom bomb. In 1945, the International Military Tribunal (1947) in Nuremberg recognized the customary nature of principles in question. It was acknowledged that "[...] by 1939 these rules laid down in the [1907 Hague] Convention [(IV) Respecting the Laws and Customs of War on Land and the Regulations annexed thereto] were recognized by all civilized nations, and were regarded as being declaratory of the laws and customs of war [...]" (p. 254). This included limitations on enemies' choice of weapons, prohibition of causing suffering that exceeded military advantage, and requirements to only attack military targets. However, the issue of atomic bombings and their compatibility with the principles was not addressed.

The actual use of nuclear weapons in Hiroshima and Nagasaki, although, not the legality of atomic weapons as such, had been addressed in 1963 *Shimoda* case by the District Court of Tokyo (Falk, 1965). It was found that the use of new weapons was legal if international law did not prohibit it. However, the attacks were pronounced illegal based on their indiscriminate nature (being directed against undefended cities with no concentration of military objectives) and unnecessary suffering they produced (Falk,



1965, p. 776). Still, such conclusions were reached relying mainly on the statutory law at the time.

More than three decades later, the International Court of Justice (hereafter – Court, ICJ) addressed the legality of nuclear weapons in its 1996 Nuclear Weapons Advisory Opinion. The Court came to a different conclusion than the court in *Shimoda* case, stating that the absence of prohibition does not prove the existence of customary norm. While recognizing uniqueness, unprecedented destructive capacity and long-lasting devastating effects of nuclear weapons, the ICJ also referred to the principles, indicating that the “use of such weapons in fact seems scarcely reconcilable with respect for such requirements” (*Nuclear Weapons Advisory Opinion*, 1996, p. 262). Yet, even those in charge of drafting the Advisory Opinion, accepted the fact that the Court’s “reply may seem unsatisfactory” (*Bedjaoui*, 1996, p. 269). The Court ultimately found itself in no position “to conclude with certainty that the use of nuclear weapons would necessarily be at variance with the principles” (p. 263). This conclusion was not, however, achieved through the application of principles to specific situations, as was rightly expected from the Court. As *McCormack* (1997) lamented, “the Court wholly failed to enter into this process”. Nevertheless, there could be certain scenarios when the use of nuclear weapons could theoretically be deemed compatible with, for instance, the requirements of principle of distinction. These are essentially situations where no distinction has to really be made, as no or few civilians are speculated to be present at the place of the attack or within its foreseeable reach. For example, using a tactical nuclear weapon against an enemy submarine equipped with nuclear weapons that has already fired or is about to fire a nuclear missile; or using nuclear weapon against an enemy army situated in a desert (*Casey-Maslen*, 2014, p. 5–6). Yet, the Court only invoked extreme circumstances of self-defence, when the survival of a state would be at stake, to support its non-finding conclusion. Thus, it argued it could not give a definitive answer.<sup>11</sup> As the ICJ President *Bedjaoui* (1996) explained, the Court “sought to avoid any temptation to create new law” and “could not say what the law does not say” (p. 47–48).

The Martens clause was also invoked by the Court, which stated that the clause “proved to be an effective means of addressing the rapid evolution of military technology” (*Nuclear Weapons Advisory Opinion*, p. 257). Although the Court further confirmed its “continuing existence and applicability” (p. 260), the issue of an actual interpretation of the clause when considering the legality of a particular weapon was not resolved (*Meron*, 2000). Thus, it remains unclear if Martens clause could serve as an effective tool to fill in any regulatory gaps.

Despite the conclusions of the Advisory Opinion causing controversy ever since, they serve as an important lesson for assessment of future weapons. Stemming from the example of nuclear weapons, if a new weapon can even under limited circumstances be used in compliance with IHL, then pronouncing it illegal based on potential incompatibility with principles of IHL would be “creating new law”. The *ICRC* (2016) expresses “serious doubts about the capability of developing and using autonomous weapon systems that would comply with IHL in all but the narrowest of scenarios and the simplest of environments, at least for the foreseeable future” (p. 80). Yet, such narrow scenarios might be enough to argue LAWS could engage legitimate targets and be used in hostilities lawfully. Thus, it has to be concluded that illegality of LAWS based on the principles alone could hardly be sustained at this stage.

However, the *ICRC* (2016) has specifically called on States to set limits on autonomy in weapon systems, so that it would be acceptable under the principles of IHL (p. 7). Therefore, principles remain very important in assessing the weapons and their deployment, so that not only the letter, but also the spirit of the law would prevail.

#### 4. Legal weapons review

It is well established that the use of new weapons cannot run counter to IHL rules and principles, and that combatants’ choice of means and methods of warfare is not unlimited. Both statutory and customary IHL require belligerents to take feasible measures during attacks to not violate IHL. It means not using weapons that, although per se legal, might cause illegal consequences in a particular given context. This is covered by the requirements stipulated in Art. 36 and Art. 82 of Additional Protocol I. Art. 36 is the key provision that obliges States to carry out legal weapons review:

In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.

Arguably, this requirement applies to all States – both parties and non-parties to Additional Protocol I: “It flows logically from the truism that States are prohibited from using illegal weapons, means and methods of warfare or from using weapons, means and methods of warfare in an illegal manner” (*Lawand, Coupland, Herby & ICRC*, 2006, p. 4). The significance of the provision stems from its preventative purpose, and it “remains, together with the Hague Regulations, the only instrument in the law of armed conflict that can act as a brake on the abuses resulting from the arms race or on the possibility of future abuses [...]” (*Pilloud et al.*, 1987, p. 427).

Art. 36 is complimented with additional requirements stipulated in Art. 82:

The High Contracting Parties at all times, and the Parties to the conflict in time of armed conflict, shall ensure that legal advisers are available, when necessary, to advise military commanders at the appropriate level on the application of the Conventions and this Protocol and on the appropriate instruction to be given to the armed forces on this subject.

<sup>11</sup> Judge Fleischhauer argued in a separate opinion that definitive answer could not be provided because there was no hierarchy of principles, i. e. the principle of distinction could not be pronounced overriding the principle of self-defence: “there is no rule in international law according to which one of the conflicting principles would prevail over the other.” (*Fleischhauer*, 1996, p. 307).

This is a very important rule given that programming of tasks for LAWS might be time-sensitive and functionality of LAWS might be of constantly evolving nature (due to potential learning capacity of AI). Thus, review of appropriateness of weapons before an attack also seems crucial.

In order to comply with the Art. 36 requirements, States are to establish internal procedures (Pilloud et al., 1987, p. 424). However, it appears that only a handful of States have institutionalized or put certain (formal) procedures in place to carry out legal weapons review (Lawand et al., 2006). Although the step-by-step practice of States is rather scarce, the review has to preferably be multidisciplinary, involving experts from different fields. This seems to be in particular important in relation to LAWS. Understanding their capabilities and foreseeing their effects might become an increasingly difficult task in the future, if LAWS become less predictable. Predictability of the use of LAWS might be a complex issue, thus, the legal review offers exactly the platform to address it. If review would not yield reliable conclusions, then certain restrictions could and should be placed on the use of LAWS: “Constraints on or parameters for the use of the weapon can be integrated into the military instructions for the use of the weapon, for instance to limit the use to a specific environment or situation” (ICRC, 2016, p. 84).

There is also a concern that without common internationally agreed standards on LAWS, the national legal review of weapons might be abused by some States that would resort to reviews “to legitimize their weapons, rather than to filter unlawful systems” (Biontino, 2016, p. 9). On the other hand, when international regulation is absent, national review is an obligation States have to respect and abide by. If a state does not carry out a legal review of a weapon, it “will be responsible in any case for any wrongful damage ensuing” (Pilloud et al., 1987, p. 423). Therefore, Art. 36, even with inherent deficiencies,<sup>12</sup> is an important tool to prevent deployment of LAWS without previous legal assessment.

## 5. Conclusions

Technological progress in relation to LAWS finds us at the crossroads regarding potential legal developments. In order to assess the prospects of regulating LAWS, key characteristics of these weapons and some contentious issues were analysed. The debate and concerns surrounding LAWS have encouraged States to start informal talks on pertinent legal issues, like definition of LAWS, suitable framework for potential regulation, and concepts of “autonomy” and “meaningful human control”. Although there is no agreement on either, there is, however, a consensus that any future use of LAWS must comply with IHL. There is also an understanding that the risk of violating IHL cannot be tolerated due to uncertainty surrounding the future characteristics of LAWS. Thus, precautionary measures, like limiting autonomy, ought to be taken if effects of ordinary use of LAWS cannot be predictable and reliable, or some effects are deemed to be harmful. To this end, CCW framework can offer flexibility that is fit to capture and accommodate the complexity of regulating LAWS. Secondly, IHL principles related to the use of weapons, namely, principle of distinction and prohibition to cause superfluous injury and unnecessary suffering, play a significant role in assessing the legality of the use of LAWS and inspiring related future regulation. However, they cannot in their own right deligitimize LAWS, as was illustrated with the example of nuclear weapons. Yet, in the absence of specific regulation, a use of any weapon must be compatible with the requirements of the principles. Finally, an obligation to carry out legal review of new weapons offers safeguards that can prevent abuse. If States were not to respect their obligation to assess the legality of LAWS, they run into a risk of being held responsible for any wrongful acts as a result of using them. All in all, it appears that lessons of the past can support our present efforts to avoid loosing touch with humanitarian considerations in relation to future weapons.

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<sup>12</sup> For example, States do not have to share the results of their legal reviews; if one State finds a weapon unlawful, the conclusion does not in any way bind other States; review is about the use of the weapon, not its possession or transfer; etc.

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